



Actual Size:  
2.28 x 2.4 x 0.5in  
57,9 x 61,0 x 12,7mm



## Input Attenuator Modules

### Features & Benefits

- Inputs: 24, 48 and 300V<sub>DC</sub>
- High surge withstand:
  - Bellcore
  - British Telecom BTR 2511
  - IEC-60801-5
- EMI/RFI specifications:
  - Bellcore TR-TSY-000513
  - British Telecom BTR 2511
  - FCC Level "A"
  - EN55022 Level "B"
- cULus, CTÜVus
- 97% efficiency
- Logic disable
- Expansion output for arrays
- Size: 2.28" x 2.4" x 0.5"  
(57,9 x 61,0 x 12,7)
- CE Marked
- RoHS Compliant (VE-IAM)

### Product Highlights

The Input Attenuator Module (VI-IAM) is a component-level, DC input front end filter designed to occupy minimum board space while providing maximum protection for today's sophisticated electrical systems. The VI-IAM, in combination with Vicor 24, 48 and 300V<sub>DC</sub> input modules, provides a highly efficient, high density power system with outputs from 1 to 95V<sub>DC</sub> and power expandable from 25 to 800W. Your system will benefit from the small size, efficiency and inherent reliability of Vicor's component-level converters, while meeting the toughest demands of Telecommunications and Industrial power applications.

This combination provides compliance with the transient requirements of Bellcore, British Telecom and IEC standards, and meets the EMI/RFI specifications of Bellcore, British Telecom and FCC Part 15, Subpart B and EN55022.

### Compatible Products

- VI-200, VE-200, VI-J00, VE-J00  
(Inputs: 1, W, 3, N and 6)
- Mega Modules
- (Inputs: 1, W, 3, N and 6)

For additional information see Section 14 of the [VI-200 & VI-J00 Design Guide](#).

### Input Characteristics

| Parameter                            | Min | Typ | Max  | Units             | Notes                              |
|--------------------------------------|-----|-----|------|-------------------|------------------------------------|
| <b>24V<sub>DC</sub> modules</b>      |     |     |      |                   |                                    |
| Steady state input                   | 21  | 24  | 32   | V <sub>DC</sub>   | –A11– models                       |
| Input spike limit                    |     |     | 300  | V <sub>DC</sub>   | Per BTNR2571 issue 4               |
|                                      |     |     | 2500 | V <sub>DCPK</sub> | Ringwave 0.5µs rise 100kHz         |
| Input surge limit                    |     |     | 100  | V <sub>DC</sub>   | Figure 1                           |
| Overvoltage shut down <sup>[a]</sup> | 34  |     | 38   | V <sub>DC</sub>   | 100ms, automatic recovery          |
| Recommended fuse                     |     |     | 20   | Amps              | 32V ACG-20                         |
| <b>24V<sub>DC</sub> modules</b>      |     |     |      |                   |                                    |
| Steady state input                   | 18  | 24  | 36   | V <sub>DC</sub>   | –AWW– models                       |
| Input spike limit                    |     |     | 300  | V <sub>DC</sub>   | Per BTNR2571 issue 4               |
|                                      |     |     | 2500 | V <sub>DCPK</sub> | Ringwave 0.5µs rise 100kHz         |
| Input surge limit                    |     |     | 100  | V <sub>DC</sub>   | Figure 1                           |
| Overvoltage shut down <sup>[a]</sup> | 37  |     | 42   | V <sub>DC</sub>   | 100ms, automatic recovery          |
| Recommended fuse                     |     |     | 20   | Amps              | 36V ACG-20                         |
| <b>48V<sub>DC</sub> modules</b>      |     |     |      |                   |                                    |
| Steady state input                   | 42  |     | 60   | V <sub>DC</sub>   | –A33– models                       |
| Input spike limit                    |     |     | 300  | V <sub>DC</sub>   | Per BTNR2571 issue 4               |
|                                      |     |     | 2500 | V <sub>DCPK</sub> | Ringwave 0.5µs rise 100kHz         |
| Input surge limit                    |     |     | 160  | V <sub>DC</sub>   | Figure 1                           |
| Overvoltage shut down <sup>[a]</sup> | 62  |     | 67   | V <sub>DC</sub>   | 100ms, automatic recovery          |
| Recommended fuse                     |     |     | 20   | Amps              | 60V 3AB-20                         |
| <b>48V<sub>DC</sub> modules</b>      |     |     |      |                   |                                    |
| Steady state input                   | 36  |     | 76   | V <sub>DC</sub>   | –ANN– models                       |
| Input spike limit                    |     |     | 300  | V <sub>DC</sub>   | Per BTNR2571 issue 4               |
|                                      |     |     | 2500 | V <sub>DCPK</sub> | Ringwave 0.5µs rise 100kHz         |
| Input surge limit                    |     |     | 276  | V <sub>DC</sub>   | Figure 1                           |
| Overvoltage shut down <sup>[a]</sup> | 77  |     | 83   | V <sub>DC</sub>   | 100ms, automatic recovery          |
| Recommended fuse                     |     |     | 20   | Amps              | 80V 3AB-20                         |
| <b>300V<sub>DC</sub> modules</b>     |     |     |      |                   |                                    |
| Steady state input                   | 200 |     | 400  | V <sub>DC</sub>   | –A66– models                       |
| Input spike limit                    |     |     | 1000 | V <sub>DC</sub>   | DM, 2 Joule, IAW IEC-801-5         |
|                                      |     |     | 2000 | V <sub>DC</sub>   | CM, 2 Joule, IAW IEC-801-5         |
| Input surge limit                    |     |     | 800  | V <sub>DC</sub>   | Figure 1                           |
| Overvoltage shut down <sup>[a]</sup> | 402 |     | 424  | V <sub>DC</sub>   | 100ms, automatic recovery          |
| Recommended fuse                     |     |     | 5    | Amps              | 250V Bussman PC-Tron               |
| <b>All models</b>                    |     |     |      |                   |                                    |
| No load power dissipation            |     | 0.5 | 1.5  | Watts             |                                    |
| Inrush current                       |     | 110 | 125  | % I <sub>IN</sub> | Steady state, I <sub>IN</sub> 10ms |

<sup>[a]</sup> The VI-IAM disables downstream converters and clamps the converter input voltage at a safe level.

## Model Selection Chart

| Model Number        | Nominal Input Voltage | Input Range              | Compatible DC-DC Converter | Converter |
|---------------------|-----------------------|--------------------------|----------------------------|-----------|
| VI-A11-CU/VE-A11-CU | 24V <sub>DC</sub>     | 21 – 32V <sub>DC</sub>   | VI-21x-Cx and VI-J1x-Cx    | C-grade   |
| VI-AWW-CU/VE-AWW-CU | 24V <sub>DC</sub>     | 18 – 36V <sub>DC</sub>   | VI-2Wx-Cx and VI-JWx-Cx    | C-grade   |
| VI-A33-CQ/VE-A33-CQ | 48V <sub>DC</sub>     | 42 – 60V <sub>DC</sub>   | VI-23x-Cx and VI-J3x-Cx    | C-grade   |
| VI-ANN-CQ/VE-ANN-CQ | 48V <sub>DC</sub>     | 36 – 76V <sub>DC</sub>   | VI-2Nx-Cx and VI-JNx-Cx    | C-grade   |
| VI-A66-CQ/VE-A66-CQ | 300V <sub>DC</sub>    | 200 – 400V <sub>DC</sub> | VI-26x-Cx and VI-J6x-Cx    | C-grade   |

Note: For alternative product grades change the “C” in the part number to “E”, “I”, or “M”.

## Specifications

(typical at T<sub>BP</sub> = 25°C, nominal line and 75% load, unless otherwise specified)

### OUTPUT CHARACTERISTICS

| Parameter                | Min   | Typ | Max  | Units           | Test Conditions/Notes                                              |
|--------------------------|-------|-----|------|-----------------|--------------------------------------------------------------------|
| Clamp voltage            |       |     |      |                 |                                                                    |
| 24V <sub>DC</sub> input  | 36.0  |     | 44.0 | V <sub>DC</sub> | –A11– models                                                       |
|                          | 40.5  |     | 50.0 | V <sub>DC</sub> | –AWW– models                                                       |
| 48V <sub>DC</sub> input  | 62.0  |     | 71   | V <sub>DC</sub> | –A33– models                                                       |
|                          | 80.0  |     | 90.0 | V <sub>DC</sub> | –ANN– models                                                       |
| 300V <sub>DC</sub> input | 400   |     | 435  | V <sub>DC</sub> | –A66– models                                                       |
| Output power             |       |     |      |                 |                                                                    |
| 24V models               |       |     | 250  | Watts           | Output of IAM                                                      |
| 48V models               |       |     | 510  | Watts           | Output of IAM                                                      |
| 300V models              |       |     | 510  | Watts           | Output of IAM                                                      |
| Internal voltage drop    |       |     |      |                 |                                                                    |
| 24V <sub>DC</sub>        | 0.6   |     | 0.85 | V <sub>DC</sub> |                                                                    |
| 48V <sub>DC</sub>        | 0.6   |     | 0.95 | V <sub>DC</sub> |                                                                    |
| 300V <sub>DC</sub>       | 1.7   |     | 3.5  | V <sub>DC</sub> |                                                                    |
| Overload protection      |       |     |      |                 |                                                                    |
| 24V <sub>DC</sub> input  | –AWW– | 20  |      | Amps            | Foldback threshold; auto recovery with latched shut down after 2ms |
|                          | –A11– | 15  |      | Amps            |                                                                    |
| 48V <sub>DC</sub> input  | –ANN– | 20  |      | Amps            |                                                                    |
|                          | –A33– | 15  |      | Amps            |                                                                    |
| 300V <sub>DC</sub> input | –A66– | 4   |      | Amps            |                                                                    |

## Specifications (Cont.)

## ISOLATION CHARACTERISTICS

| Parameter      | Min | Typ   | Max | Units            | Test Conditions |
|----------------|-----|-------|-----|------------------|-----------------|
| Input to base  |     | 1,500 |     | V <sub>RMS</sub> | 1 minute        |
| Output to base |     | 1,500 |     | V <sub>RMS</sub> | 1 minute        |

## THERMAL CHARACTERISTICS

| Parameter                        | Min | Typ  | Max | Units   | Test Conditions                  |
|----------------------------------|-----|------|-----|---------|----------------------------------|
| Efficiency                       |     | 97   |     | %       |                                  |
| Baseplate to sink                |     | 0.14 |     | °C/Watt |                                  |
| Operating temperature, baseplate |     |      | 100 | °C      | See product grade specifications |
| Storage temperature              |     |      | 125 | °C      | See product grade specifications |

## MECHANICAL SPECIFICATIONS

| Parameter | Min | Typ      | Max | Units          | Test Conditions |
|-----------|-----|----------|-----|----------------|-----------------|
| Weight    |     | 3.0 (85) |     | ounces (grams) |                 |

## PRODUCT GRADE SPECIFICATIONS

| Parameter                   | E               | C               | I               | M               |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|
| Storage Temp. (Baseplate)   | -20°C to +105°C | -40°C to +105°C | -55°C to +105°C | -65°C to +105°C |
| Operating Temp. (Baseplate) | -10°C to +100°C | -25°C to +100°C | -40°C to +100°C | -55°C to +100°C |

## EMI CHARACTERISTICS

|                               |                                                                                                                                                                     |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EMI/RFI (conducted emissions) | Meets Bellcore TR-TSY-000513, Issue 2, Rev. 1 (24 and 48V Input);<br>British Telecom BTR 2511, Issue 2 (24 and 48V Input);<br>FCC Part 15, Class A, EN55022 Class B |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## TRANSIENT PROTECTION

|  |                                                                                                             |
|--|-------------------------------------------------------------------------------------------------------------|
|  | Meets Bellcore TA-TSY-001003, Issue 1, 9/89<br>British Telecom BTR 2511, IEC61000-4-5 Level 2 (VI-A66 only) |
|--|-------------------------------------------------------------------------------------------------------------|



**Figure 1** — Safe operating area based on input voltage of IAM (1% duty cycle max.,  $Z_s=0.5\Omega$ , for short duration transient capability refer to specifications.)



**Figure 2** — Block diagram of Input Attenuator Module (IAM)



**Figure 3** — Typical connection diagram. For recommended fuse (F2) see VI-200 / VI-J00 application manual.

| Input Voltage | Recommended Fuse          |
|---------------|---------------------------|
| 24V           | 20A / 32V (AGC-20)        |
| 24V "W"       | 20A / 36V (AGC-20)        |
| 48V           | 20A / 60V (3AB-20)        |
| 48V "N"       | 20A / 80V (3AB-20)        |
| 300V          | 5A / 250V Bussman PC-Tron |

**Table 1** — Recommended F1 fusing based on input voltage (see Figure 3)

| Input Voltage                   | Maximum Capacitance <sup>[a]</sup> |
|---------------------------------|------------------------------------|
| 24V <sub>DC</sub> (21 – 32V)    | 470μF                              |
| 24V <sub>DC</sub> (18 – 36V)    | 470μF                              |
| 48V <sub>DC</sub> (42 – 60V)    | 220μF                              |
| 48V <sub>DC</sub> (36 – 76V)    | 120μF                              |
| 300V <sub>DC</sub> (200 – 400V) | 27μF                               |

<sup>[a]</sup> Capacitance should be distributed across the input of each DC-DC converter. (C1, Figure 3)

**Table 2** — Recommended distributed capacitance on input of DC-DC converter(s)

**Storage**

Vicor products, when not installed in customer units, should be stored in ESD safe packaging in accordance with ANSI/ESD S20.20, "Protection of Electrical and Electronic Parts, Assemblies and Equipment" and should be maintained in a temperature controlled factory/warehouse environment not exposed to outside elements controlled between the temperature ranges of 15°C and 38°C. Humidity shall not be condensing, no minimum humidity when stored in an ESD compliant package.

MECHANICAL DRAWING



Note: For alternate packaging options refer to the mechanical drawing page of vicorpower.com

**Vicor's comprehensive line of power solutions includes high density AC-DC and DC-DC modules and accessory components, fully configurable AC-DC and DC-DC power supplies, and complete custom power systems.**

Information furnished by Vicor is believed to be accurate and reliable. However, no responsibility is assumed by Vicor for its use. Vicor makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication. Vicor reserves the right to make changes to any products, specifications, and product descriptions at any time without notice. Information published by Vicor has been checked and is believed to be accurate at the time it was printed; however, Vicor assumes no responsibility for inaccuracies. Testing and other quality controls are used to the extent Vicor deems necessary to support Vicor's product warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

**Specifications are subject to change without notice.**

Visit <http://www.vicorpower.com/dc-dc-filters/iam> for the latest product information.

### **Vicor's Standard Terms and Conditions and Product Warranty**

All sales are subject to Vicor's Standard Terms and Conditions of Sale, and Product Warranty which are available on Vicor's webpage (<http://www.vicorpower.com/termsconditionswarranty>) or upon request.

### **Life Support Policy**

VICOR'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE CHIEF EXECUTIVE OFFICER AND GENERAL COUNSEL OF VICOR CORPORATION. As used herein, life support devices or systems are devices which (a) are intended for surgical implant into the body, or (b) support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in a significant injury to the user. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness. Per Vicor Terms and Conditions of Sale, the user of Vicor products and components in life support applications assumes all risks of such use and indemnifies Vicor against all liability and damages.

### **Intellectual Property Notice**

Vicor and its subsidiaries own Intellectual Property (including issued U.S. and Foreign Patents and pending patent applications) relating to the products described in this data sheet. No license, whether express, implied, or arising by estoppel or otherwise, to any intellectual property rights is granted by this document. Interested parties should contact Vicor's Intellectual Property Department.

**Vicor Corporation**  
25 Frontage Road  
Andover, MA, USA 01810  
Tel: 800-735-6200  
Fax: 978-475-6715

**email**

Customer Service: [custserv@vicorpower.com](mailto:custserv@vicorpower.com)  
Technical Support: [apps@vicorpower.com](mailto:apps@vicorpower.com)

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Vicor:

[VE-AWW-CU](#) [VE-ANN-CQ](#) [VE-ANN-EQ](#) [VE-ANN-IQ](#) [VE-ANN-MQ](#) [VE-AWW-EU](#) [VE-AWW-EU-B1](#) [VI-LAWW-IU](#)  
[VI-LAWW-MU](#) [VI-LA33-CQ](#) [VI-LA66-CQ](#) [VI-LANN-CQ](#) [VI-LANN-EQ](#) [VI-LAWW-CU](#) [VI-LAWW-EU](#) [VI-ANN-CQ-S](#) [VI-ANN-EQ](#) [VI-A66-01](#) [VI-LA11-CU](#) [VI-LA11-EU](#) [VI-LA11-IU](#) [VE-A66-IQ](#) [VE-A66-MQ](#) [VI-ANN-CQ](#) [VI-ANN-CQ-B1](#) [VI-ANN-CQ-F2](#) [VI-ANN-CQ-F4](#) [VI-A66-EQ](#) [VI-A66-EQ-B1](#) [VE-A33-EQ](#) [VE-A33-IQ](#) [VE-A66-CQ](#) [VE-A66-EQ](#) [VE-A11-IU](#) [VE-A11-MU](#) [VE-A33-CQ](#) [VI-AWW-IU-03](#) [VI-A66-CQ-F2](#) [VI-A66-CQ-S](#) [VI-AWW-MU-B1](#) [VI-AWW-MU-F1](#) [VI-AWW-MU-F3](#) [VI-AWW-MU-S](#) [VE-A11-CU](#) [VE-A11-EU](#) [VI-AWW-IU-F1](#) [VI-AWW-IU-F2](#) [VI-AWW-IU-F3](#) [VI-AWW-IU-F4](#) [VI-AWW-IU-S](#) [VI-AWW-MU](#) [VI-AWW-EU](#) [VI-AWW-EU-F1](#) [VI-AWW-EU-F6](#) [VI-AWW-EU-S](#) [VI-AWW-IU](#) [VI-AWW-IU-B1](#) [VI-AWW-CU-F1](#) [VI-AWW-CU-F2](#) [VI-AWW-CU-F3](#) [VI-AWW-CU-F4](#) [VI-AWW-CU-F6](#) [VI-AWW-CU-S](#) [VI-A66-CQ-F1](#) [VI-ANN-IQ](#) [VI-ANN-IQ-F4](#) [VI-ANN-MQ](#) [VI-AWW-CU](#) [VI-AWW-CU-B1](#) [VI-A33-IQ](#) [VI-A33-IQ-F2](#) [VI-A33-IQ-S](#) [VI-A33-MQ](#) [VI-A66-CQ](#) [VI-A66-CQ-B1](#) [VI-A33-CQ-B1](#) [VI-A33-CQ-F2](#) [VI-A33-CQ-F4](#) [VI-A33-CQ-S](#) [VI-A33-EQ](#) [VI-A33-EQ-F2](#) [VI-A11-EU](#) [VI-A11-EU-B1](#) [VI-A11-IU](#) [VI-A11-IU-F4](#) [VI-A11-MU](#) [VI-A33-CQ](#) [VI-A66-MQ-B1](#) [VI-A11-CU](#) [VI-A11-CU-B1](#) [VI-A11-CU-F2](#) [VI-A11-CU-F4](#) [VI-A11-CU-S](#) [VE-AWW-IU](#) [VE-AWW-MU](#) [VI-ANN-EQ-F2](#) [VI-A66-IQ](#) [VI-A66-IQ-F2](#) [VI-A66-MQ](#)

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9